

Appl. No. 09/998,801
Amdt. dated June 22, 2004
Reply to Office action of Dec. 22, 2003

REMARKS/ARGUMENTS

As discussed with the Examiner by telephone on 12/2/03, claims 1-14 and 28-35 are canceled in response to the Examiner's restriction requirement. Claims 15-27 remain in the application. In view of the Examiner's restriction requirement, applicant retains the right to present claims 1-14 and 28-35 in a divisional application(s). The Abstract has been amended to comply with MPEP § 608.01(b).

Claims 15-17 and 22 are rejected under 37 U.S.C. 102 as being anticipated by GB 1,564,630 ("Yee"). Independent claim 15 is directed at a resistive heater for heating a semiconductor processing chamber including an doped ceramic heating element and an undoped ceramic material encasing at least a portion of the heating element to form a monolithic plate. As described in the present application, there are a number of advantages to using such a heater for semiconductor processing. Among other things, the monolithic plate has strong mechanical properties (see page 11, lines 21-28), and may be used in some embodiments as a susceptor eliminating the need for a separate susceptor (see page 15, lines 9-11).

Yee discloses an electric heating element comprising at least three layers of ceramic material -- a doped ceramic material, a barrier layer and an undoped layer (see page 1, lines 29-30). In Yee, these layers are all part of the heating element and are not used to encase heating elements to form a monolithic plate heater. In fact, the exemplary heating element described in Yee is a hollow cylindrical rod heating element (see Figure 1 and page 3, lines 4-5). Yee does not disclose a resistive heater for semiconductor processing with a doped ceramic heating element encased with an undoped ceramic material to form a monolithic plate. Therefore, claim 15 is not anticipated by Yee.

Moreover, claim 15 is not rendered obvious by Yee. Yee states that the heater elements disclosed in Yee that can be used, for example, as igniter rods in gas turbine combustion chambers, in boiler combustion chambers and as heating elements in industrial and laboratory furnaces and ovens (see page 1, lines 6-8). The exemplary heating element described in Yee uses a thin (e.g., 0.54 mm) layer of Silicon Carbide around the outside diameter of the heating element. There is no teaching or

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suggestion to form a solid monolithic plate for semiconductor processing in accordance with the claimed invention in the present application.

In addition, none of the other references cited in the office action by the Examiner teach the use of a resistive heater for semiconductor processing with a doped ceramic heating element encased with an undoped ceramic material to form a monolithic plate. While Chen discloses a multi-zone resistive heater that may be used for chemical vapor deposition (CVD), Chen does not disclose a doped ceramic heating element encased with an undoped ceramic material to form a monolithic plate. In Chen, separate heating elements are positioned at different planes within a susceptor. The exemplary heating elements described in Chen are very thin (e.g., 2 mils) traces of molybdenum (see column 11, lines 63-65) and are not part of a monolithic plate formed by encasing a doped ceramic with an undoped ceramic as set forth in claim 15 of the present application.

In view of the foregoing, independent claim 15 is believed to be patentable. Claims 16-27 depend from claim 15, and accordingly, these claims are also believed to be patentable.

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CONCLUSION

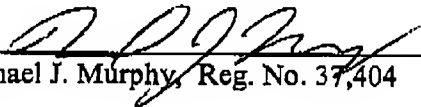
Applicants submit that the instant application is in condition for allowance. Should the Examiner have any questions, the Examiner is requested to contact the undersigned attorney.

The Commissioner is authorized to charge any additional fees which may be required, including petition fees and extension of time fees, to Deposit Account No. 23-2415 (Docket No. 14912.832).

Respectfully submitted,

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